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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/650,086	08/26/2003	James F. Bredt	ZCO-107CP2	5896

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GOODWIN PROCTER LLP  
PATENT ADMINISTRATOR  
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BOSTON, MA 02109-2881

EXAMINER
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SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/650,086

Applicant(s)

BREDT ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 and 26-78 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24, 26-55, 60-63, 66-68, 72-76 and 78 is/are rejected.
- 7) ☐ Claim(s) 56-59, 64, 65, 69-71 and 77 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. All outstanding rejections are overcome by applicants' after-final amendment and 1.132 declaration filed 3/3/06 which have been entered.

Upon updating the searches, new references came to the attention of the examiner.

In light of the use of these new references against the present claims as set forth in paragraphs 8-9 below as well as the double patenting rejections set forth in paragraphs 2-4 below, the following action is non-final and thus, the finality of the previous office action has been withdrawn.

### **Double Patenting**

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claim 38 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 17, 20, and 21 of U.S. Patent No. 6,610,429 (Bredt et al. '429). Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following explanation.

Bredt et al. '429 disclose method for forming prototype article comprising providing a first layer of a particulate material including plaster, adhesive, and accelerator; dispersing an aqueous liquid onto a portion of the first layer; allowing the portion of the first layer to solidify; providing a second layer of the particulate material, adhesive, and accelerator on the first layer; dispersing an aqueous liquid onto a portion of the second layer; and allowing the portion of the second layer to solidify.

While Bredt et al. '429 is drawn to method "for forming a prototype article" and the present claim is drawn to method "of three dimensional printing", it is noted that each method contains the same method steps.

The only difference between Brecht et al. '429 and the present claimed invention is the requirement in the claim (a) that the solid article has a "plurality of layers" and (b) of the amount of adhesive.

With respect to difference (a), although there is no explicit disclosure in Brecht et al. '429 that the article has a "plurality of layers", given that the method comprises forming a second layer on a first layer, it is clear that the article does in fact have a plurality of layers.

As further evidence to support this position, applicants' attention is drawn to MPEP 804 where it is disclosed that "the specification can always be used as a dictionary to learn the meaning of a term in a patent claim." *In re Boylan*, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in an application defines an obvious variation of an invention claimed in the patent. (underlining added by examiner for emphasis) *In re Vogel*, 422 F.2d 438, 164 USPQ 619, 622 (CCPA 1970).

Consistent with the above underlined portion of the MPEP citation, attention is drawn to col.3, lines 35-36 of Brecht et al. '429 which discloses that the article does in fact have a "plurality of layers".

With respect to difference (b), Brecht et al. is silent with respect to the amount of adhesive utilized.

Applicants' attention is drawn to MPEP 804 where it is disclosed that "the specification can always be used as a dictionary to learn the meaning of a term in a patent claim." *In re Boylan*, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the specification which provide support for the patent claims may also be examined and considered when

addressing the issue of whether a claim in an application defines an obvious variation of an invention claimed in the patent. (underlining added by examiner for emphasis) *In re Vogel*, 422 F.2d 438,164 USPQ 619,622 (CCPA 1970).

Consistent with the above underlined portion of the MPEP citation, attention is drawn to col.8, lines 52-64 of Brecht et al. '429 that discloses using less than 50% or about 20% to about 40% adhesive in order to add strength to the final article and reduce distortion.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art that the article of Brecht et al. does in fact possess a plurality of layers and to use about 20 to about 40% adhesive in the method of Brecht et al. '429 in order to produce article with good strength, and thereby arrive at the present claim from Brecht et al.'429.

4. Claims 1-7, 9-14, 16-17, 20, 22-24, 26-33, 35-37, 39-49, 66-67, 75-76, and 78 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 9-24, and 83 of copending Application No. 10/848,831. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following explanation.

Copending 10/848,831 discloses powder for three dimensional printing comprising thermoplastic particulate material, adhesive particulate material possessing mean particle diameter of 10-100  $\mu\text{m}$  that includes water-soluble resin such as polyvinyl pyrrolidone copolymer with vinyl acetate or starch and inorganic material such as plaster or bentonite, filler such as plaster, starch, and protein, processing aid, and fiber. There is also disclosed article comprising reaction product of the powder and fluid.

The difference between copending 10/848,831 and the present claimed invention is the requirement in the claims of (a) average particle size of the filler, (b) specific type of processing aid, (c) specific type and amount of fiber, and (d) amount of adhesive material.

Applicants' attention is drawn to MPEP 804 where it is disclosed that "the specification can always be used as a dictionary to learn the meaning of a term in a patent claim." *In re Boylan*, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in an application defines an obvious variation of an invention claimed in the patent. (underlining added by examiner for emphasis) *In re Vogel*, 422 F.2d 438, 164 USPQ 619, 622 (CCPA 1970).

With respect to difference (a) and consistent with the above underlined portion of the MPEP citation, applicants' attention is drawn to paragraph 87 of copending 10/848,831 that discloses that the filler has average particle size of 5-100  $\mu\text{m}$  in order to reinforce the article strength and improve the quality of the article.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use filler with average particle size of 5-100  $\mu\text{m}$  in copending 10/848,831 in order to reinforce the article strength and improve the quality of the article, and thus arrive at the present invention from the copending one.

With respect to difference (b) and consistent with the above underlined portion of the MPEP citation, applicants' attention is drawn to paragraphs 22 and 95 of copending 10/848,831

that discloses the use of processing aid such as polypropylene glycol or lecithin in order to prevent layers of the article from shifting during spreading.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use processing aid that is polypropylene glycol or lecithin in copending 10/848,831 in order to prevent layers of the article from shifting, and thus arrive at the present invention from the copending one.

With respect to difference (c) and consistent with the above underlined portion of the MPEP citation, applicants' attention is drawn to paragraphs 90-91 of copending 10/848,831 that discloses using less than 50% fiber including polymeric fiber such as cellulose fiber in order to provide structural reinforcement and structural integrity to the article.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use less than 50% fiber such as cellulose fiber in copending 10/848,831 in order to provide structural reinforcement and structural integrity to the article, and thus arrive at the present invention from the copending one.

With respect to difference (d) and consistent with the above underlined portion of the MPEP citation, applicants' attention is drawn to Table 1 of copending 10/848,831 that discloses the use of 0-30%, preferably 15%, adhesive particulate material and 0-20%, preferably 10% filler.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use specific amount of adhesive particulate and filler in copending 10/848,831 in order to produce composition with desired properties depending on its end use, and thus arrive at the present invention from the copending one.



It is noted that copending 10/848,831 discloses the use of thermoplastic particulate adhesive while the present claims are silent with respect to such adhesive. However, in light of the open language of the present claims, i.e. "comprising", it is clear that the present claims are open to the inclusion of additional ingredients including thermoplastic adhesive material as found in copending 10/848,831.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

5. Claims 1-7, 9-14, 16-17, 20, 22-24, 26-33, 35-37, 39-49, 66-67, 75-76, and 78 are directed to an invention not patentably distinct from claims 1, 9-24, and 83 of commonly assigned 10/848,831. Specifically, although the conflicting claims are not identical, they are not patentably distinct for the reasons given in paragraph 4 above.

6. The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP Chapter 2300). Commonly assigned 10/848,831, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

**Claim Rejections - 35 USC § 112**

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 8-9, 11-16, 18, 22, and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(a) Claim 8, which depends on claim 1, recites that the “filler is a polymer” while claim 1 has been amended to recite “filler comprising plaster”. Thus, the scope of the claim is confusing given that it is not clear how the filler “is” a polymer and the filler comprises plaster. Should claim 8 recite, for instance, wherein the filler “further comprises” a polymer? Clarification is requested.

Similar questions arise with respect to claims 12, 17, 19, and 23 which are each drawn to a specific filler as is claim 8 and which each depend on claim 1.

(b) Claim 9, which depends on claim 7, recites the limitation “the adhesive material” in line 1. There is insufficient antecedent basis for this limitation in the claim. It is suggested that the cited phrase is amended to recite “the particulate adhesive material”.

Similar suggestion made in claim 11 which depends on claim 9, and thus ultimately on claim 7, and which also recites "the adhesive material".

(c) Claim 16, which depends on claim 1, recites the limitation "the adhesive material" in line 1. There is insufficient antecedent basis for this limitation in the claim. It is suggested that the cited phrase is amended to recite "the particulate adhesive material".

Similar suggestion made in claims 18 and 22 which also depend on claim 1 and which each also recite "the adhesive material".

**Claim Rejections - 35 USC § 102**

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-5, 7, 9-14, 18-19, 21-24, 26-30, 34, 35, 37, 39-41, 44-46, 66, and 78 are rejected under 35 U.S.C. 102(b) as being anticipated by GB 2048235.

GB 2048235 discloses dry composition comprising 35-95% plaster possessing particle size of less than 150  $\mu\text{m}$ , 1-01% polyvinyl alcohol binder, i.e. particulate adhesive, 0-64% limestone having particle size less than 100  $\mu\text{m}$ , 0-5% starch, and 0-0.06% citric acid. There is also disclosed kit comprising the dry composition and water (page 1, lines 16-21 and 30-61 and page 2, line 32).

While there is no disclosure in GB 2048235 that the composition is a "three dimensional printing" composition or is "suitable for use in three dimensional printing to form an article

comprised of a plurality of layers” as presently claimed, applicants attention is drawn to MPEP 2111.02 which states that “if the body of a claim fully and intrinsically sets forth all the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention’s limitations, then the preamble is not considered a limitation and is of no significance to claim construction”. Further, MPEP 2111.02 states that statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the purpose or intended use results in a structural difference between the claimed invention and the prior art. Only if such structural difference exists, does the recitation serve to limit the claim. If the prior art structure is capable of performing the intended use, then it meets the claim.

It is the examiner’s position that the preamble does not state any distinct definition of any of the claimed invention’s limitations and further that the purpose or intended use recited in the present claims does not result in a structural difference between the presently claimed invention and the prior art composition and further that the prior art structure which is a composition identical to that set forth in the present claims is capable of performing the recited purpose or intended use.

In light of the above, it is clear that GB 2048235 anticipates the present claims.

11. Claims 1-4, 6-7, 9, 11-14, 18-19, 21-24, 26-30, 35, 37, 50-55, 60-63, 66-68, 72-74, and 78 are rejected under 35 U.S.C. 102(b) as being anticipated by Maynard et al. (U.S. 3,297,601).

Maynard et al. discloses dry composition comprises 45-90% gypsum or calcium semihydrate, 4-10% polyvinyl acetate binder, i.e. particulate adhesive, 0.1-65% accelerator such

as aluminum sulfate or terra alba, 0.5-2% filler such as limestone, and starch. There is also disclosed a kit comprising the dry composition and water. Further, given that Maynard et al. disclose the use of starch and polyvinyl acetate binder, it is clear that the composition comprises combination of first particulate material and second particulate material as required in present claim 50 (col.2, lines 32-36 and 67-70, col.3, lines 36-55, col.4, lines 5-19 and 48-54, and col.5, lines 19-21).

While there is no disclosure in Maynard et al. that the composition is a “three dimensional printing” composition or is “suitable for use in three dimensional printing to form an article comprised of a plurality of layers” as presently claimed, applicants attention is drawn to MPEP 2111.02 which states that “if the body of a claim fully and intrinsically sets forth all the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention’s limitations, then the preamble is not considered a limitation and is of no significance to claim construction”. Further, MPEP 2111.02 states that statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the purpose or intended use results in a structural difference between the claimed invention and the prior art. Only if such structural difference exists, does the recitation serve to limit the claim. If the prior art structure is capable of performing the intended use, then it meets the claim.

It is the examiner’s position that the preamble does not state any distinct definition of any of the claimed invention’s limitations and further that the purpose or intended use recited in the present claims does not result in a structural difference between the presently claimed invention and the prior art composition and further that the prior art structure which is a composition

identical to that set forth in the present claims is capable of performing the recited purpose or intended use.

In light of the above, it is clear that Maynard et al. anticipate the present claims.

**Allowable Subject Matter**

12. Claims 56-59, 64-65, 69-71, and 77 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

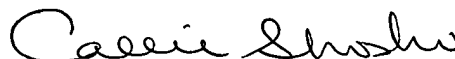
Claims 56-59, 64-65, 69-71, and 77 would be allowable if rewritten in independent form as described above given that there is no disclosure in the "closest" prior art GB 2048235 or Maynard et al. (U.S. 3,297,601) of (i) three dimensional printing composition comprising plaster, first particulate adhesive, second particulate adhesive, and accelerator wherein the first particulate adhesive is polyvinyl alcohol, the first or second particulate adhesive is Dextrin, the second particulate adhesive is cellulose gel, or the first particulate adhesive and the second particulate adhesive are present in amount of 15-30% and 2-10%, respectively (claims 56-59 and 64-65) (ii) kit comprising three dimensional printing composition and aqueous fluid wherein the aqueous fluid comprises accelerator or humectant (claims 69-71) or (iii) three dimensional printing composition comprising lodyne (claim 77).

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Callie E. Shosho  
Primary Examiner  
Art Unit 1714

CS  
3/16/06